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EXAMINER

HARPER, LEON JONATHAN

ART UNIT

PAPER NUMBER

2166

DATE MAILED: 08/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/629,939	<b>Applicant(s)</b> SHYAM ET AL.	
	<b>Examiner</b> Leon J. Harper	<b>Art Unit</b> 2166	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 24 May 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>7/26/06</u> .   | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Response to Amendment***

1. The amendment filed 5/24/2006 has been entered. Claims 2,4,11-15,17,18,20,22,29,30 have been amended. No claims have been canceled and no claims have been added. Accordingly claims 1-30 are pending.

### ***35 USC § 112***

2. In accordance with applicant's amended claims and applicant's remarks/arguments, examiner is noting that applicant has invoked 35 USC § 112 sixth paragraph with respect to claim 13 limitations and all claims dependent therefrom since they incorporated the limitations of claim 13.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5551027 (hereinafter Choy) in view of US 20020032678 (hereinafter Cornwell) and in further view of Linux Man page for fetch (hereinafter SGI).

As for claim 1 Choy discloses: wherein rows of the base table are stored in table partitions and wherein there is one index partition for each determined table partition (See column 7 lines 42-46), wherein each index partition includes nodes, wherein each node in each index partition includes at least one key column value from a corresponding table row in the table partition associated with the index partition and a location identifier identifying the corresponding table row in the corresponding table partition (See column 7 lines 19-29 and column 7 lines 38-40); determining a set of nodes, one from each index partition, whose key column value satisfies the query predicate (See column 11 lines 24-27), selecting one node from the set; and returning data from the table row identified by the location identifier in the selected node (See column 11 lines 43-47 ).

Choy however, does not explicitly disclose receiving a fetch request to fetch data from a base table that satisfies a query predicate, and in response to the fetch request. Cornwell however, does disclose receiving a fetch request to fetch data from a base table that satisfies a query predicate (See paragraph 0087). SGI also discloses fetch request both receiving and responding to (See SGI page 2). It would have been obvious

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to an artisan of ordinary skill in the pertinent art to have incorporated the teachings of Levine and SGI into the system of Choy. The modification would have been obvious because fetch request are very efficient ways of searching, which has been a problem in the art (See Choy column 2 lines 55-59).

As for claim 2 the rejection of claim 1 is incorporated, and further Cornwell discloses: determining whether to modify a direction (See paragraph 0093); wherein the direction comprises the direction in which index partitions are scanned to determine nodes whose key column values satisfy the query predicate (See paragraph 0100) modifying the direction (See paragraph 0099) if the determination is made to modify, and determining the set of nodes based on the direction (See paragraph 0099).

As for claim 3 the rejection of claim 2 is incorporated, and further Cornwell discloses: wherein determining whether to modify the direction of the fetch request is based on a current fetch direction and whether the current fetch direction is opposite an ordering of the index partitions (See paragraph 0099).

As for claim 4 the rejection of claim 2 is incorporated, and further Cornwell discloses: setting the fetch direction to backward if the fetch direction is backward and the fetch direction is not opposite the ordering of the index partitions or if the fetch direction is forward and the fetch direction is opposite the ordering of the index partitions, and setting the fetch direction to forward if the fetch direction is backward and

the fetch direction is opposite index the ordering of the index partitions or if the fetch direction is forward and the fetch direction is not opposite the ordering of the index partitions (See paragraph 0099).

As for claim 5 the rejection of claim 2 is incorporated, and further Cornwell discloses: if the fetch request is a first fetch of the fetch request, then selecting one node starting from one of: a lowest key value from each index partition if the fetch direction is forward or highest key value from each index partition if the fetch direction is backward (See paragraph 0087).

As for claim 6 the rejection of claim 2 is incorporated, and further Cornwell discloses: if the fetch request is not a first fetch of the fetch request, then determining whether a previous direction of a previous fetch request is a same direction as the direction of the fetch request, wherein the direction of the fetch request is capable of having been modified (See paragraph 0098); and if the previous and current directions are different, then discarding all saved nodes for the index partitions and selecting one node from a last selected node (See paragraph 0095).

As for claim 7 the rejection of claim 6 is incorporated, and further Cornwell discloses: if the previous and current directions are the same, then scanning in the direction of the fetch request from the previously saved node in each index partition (See paragraph 0096).

As for claim 8 the rejection of claim 1 is incorporated, and further Cornwell discloses: receiving a subsequent fetch request to fetch data from the base table (See paragraph 0094), replacing a previously selected node selected in a previous fetch request in the set with one node in the index partition including the previously selected node whose key column value satisfies the query predicate to form a modified set; selecting one node from the modified set; and returning the table row identified by the location identifier in the node selected from the modified set (See paragraph 0095).

As for claim 9 the rejection of claim 8 is incorporated, and further Cornwell discloses: wherein the subsequent fetch request comprises a fetch relative request to fetch a row that is multiple number of rows from the previously selected node (See paragraph 0095 "cursor is set to a number of rows"), further comprising: performing the steps of replacing the previously selected node and selecting one node multiple number of times to determine the selected node to return to the fetch relative request to satisfy a fetch quantity (See paragraph 0095).

As for claim 10 the rejection of claim 8 is incorporated, and further Cornwell discloses: wherein the subsequent fetch request comprises a fetch absolute request to fetch a row that is multiple number of rows from one end of the table (See first two lines of paragraph 0099), further comprising: determining a new set of nodes, one from each index partition, by scanning from one end of the index partitions for a first node whose

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key column value satisfies the query predicate and whose key column value is greater than the previously selected node if fetching forward and the key is less than the previously selected node if fetching backward', performing the steps of replacing the previously selected node and selecting one node a number of times that is one less than the number of rows indicated in the fetch absolute request to determine the selected node to return to the fetch relative request; and performing the steps of replacing the previously selected node and selecting one node the multiple number of times to determine the selected node to return to the fetch relative request (See paragraph 0099).

As for claim 11 the rejection of claim 1 is incorporated, and further Choy discloses: determining a new set of nodes from each index partition; and caching the determined new set of nodes when performing the fetch operation (See column 8 line 65- column 9 line 6).

Choy however, does not explicitly disclose: discarding the cached keys if the fetch request is in an opposite direction of a previous fetch request; Cornwell however does disclose: discarding the cached keys if the fetch request is in an opposite direction of a previous fetch request (See paragraph 0097 and the movement of the cursor).

As for claim 12 the rejection of claim 11 is incorporated, and further Cornwell discloses: processing the fetch request to determine set of nodes in the backward direction in the previous fetch request (See paragraph 0095 "setting  $l = l-j$ "); inverting



the keys and sorting the inverted keys; and selecting the one node containing the lowest inverted key to return (See last 5 lines of paragraph 0095 ).

As for claim 13 Choy discloses:: table partitions storing rows of the base table implemented in the computer readable medium, index partitions, wherein there is one index partition for each determined table partition (See column 7 lines 42-46), wherein each index partition includes nodes, wherein each node in each index partition includes at least one key column value from a corresponding table row in the table partition associated with the index partition and a location identifier identifying the corresponding table row in the corresponding table partition(See column 7 lines 19-29 and column 7 lines 38-40); means for determining a set of nodes, one from each index partition, whose key column value satisfies the query predicate (See column 11 lines 24-27); means for selecting one node from the set; and means for returning data from the table row identified by the location identifier in the selected node in response to the fetch request (See column 11 lines 43-47 ).

Choy however, does not explicitly disclose means for receiving a fetch request to fetch data from a base table that satisfies a query predicate, and in response to the fetch request. Cornwell however, does disclose a computer readable medium (See paragraph 0019); a base table implemented in the computer readable medium (See paragraph 0019) receiving a fetch request to fetch data from a base table that satisfies a query predicate (See paragraph 0087). SGI also discloses fetch request both receiving and responding to (See SGI page 2). It would have been obvious to an artisan

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of ordinary skill in the pertinent art to have incorporated the teachings of Levine and SGI into the system of Choy. The modification would have been obvious because fetch request are very efficient ways of searching, which has been a problem in the art (See Choy column 2 lines 55-59).

Claim 14 are system claims corresponding to method claim 2, and is thus rejected for the same reasons set forth in the rejection of claim 2.

Claim 15 is a system claim corresponding to method claim 4 and is thus rejected for the same reasons set forth in the rejection of claim 4.

Claim 16 is a system claim corresponding to method claim 8 and is thus rejected for the same reasons set forth in the rejection of claim 8.

Claim 17 is a system claim corresponding to method claim 11 and is thus rejected for the same reasons set forth in the rejection of claim 11.

Claim 18 is a system claim corresponding to method claim 12 and is thus rejected for the same reasons set forth in the rejection of claim 12.

Claims 19-30 are article of manufacture claims corresponding to method claims 1- 12 respectively, and are thus rejected for the same reasons set forth in the rejection of claims 1- 12.

***Response to Arguments***

Applicant's arguments filed 5/24/2006 have been fully considered but they are not persuasive.

**Applicant argues:**

First off, there is no suggestion in the cited art of using partitions one for each table partition to search the table partitions for a fetch request query to fetch data from a base table. The Examiner cited col. 2, lines 55-59 of Choy as providing the motivation to modify the index partitioning scheme of Choy to be applied to processing fetch request. The cited col 2 mentions that indexes are maintained on a search field to provide search efficiency. Applicants submit that although indexes provide search efficiency, there is no teaching or suggestion here that the particular described index scheme of Choy be used search efficiency for fetch request. For instance, there is no suggestion or motivation to use with search request the claimed indexing scheme of one index partition for each determined table partition, wherein each index partition includes nodes, wherein each node in each index partition includes at least one key column value from a corresponding table row in the table partition associated with the index partition and a

location identifier identifying the corresponding table row in the corresponding table partition.

**Examiner Responds:**

Examiner is not persuaded. During patent examination, the pending claims must be 'given the broadest reasonable interpretation consistent with the specification.' Applicant always has the opportunity to amend the claims during prosecution and broad interpretation by the examiner reduces the possibility that the claim, once issued, will be interpreted more broadly than is justified. *In re Prater*, 162 USPQ 541,550-51 (CCPA 1969). In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to combine the teachings of Choy Cornwell and SGI as indicated above, to improve efficiency. Choy does disclose indexing scheme of one index partition for each determined table partition (See column 7 lines 42-44), wherein each index partition includes nodes (See column 7 lines 21-23), wherein each node in each index partition includes at least one key column value from a corresponding table row in the table

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partition associated with the index partition and a location identifier identifying the corresponding table row in the corresponding table partition (See column 7 lines 20-26) as disclosed above. The motivation is to combine a fetch command with the disclosed teachings. It would have been obvious to an artisan of ordinary skill in the pertinent art to have combined the teachings above because fetch request are very efficient ways of searching, which has been a problem in the art (See Choy column 2 lines 55-59). Moreover, the system of Choy was designed to be extended and incorporate special commands (See column 8 lines 10-15).

**Applicant Argues:**

The cited para. 0094 discusses how one fetches backwards in a result table. Nowhere does the cited para. Anywhere teach or suggest the claims requirement of determining whether to modify the direction of a fetch request, wherein the direction indicates the direction in which the index partition is scanned. Further nowhere does the cited paragraph teach, suggest or mention making such determination based on whether a current fetch direction is opposite an ordering of the index partitions.

**Examiner Responds:**

Examiner is not persuaded. Examiner now relies on paragraph 0099 which more explicitly illustrates the claimed invention. A fetch absolute operation can fetch forward

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or backward depending on the current direction it also can change direction so that the net result is that you always move forward hence how  $k$  and  $-k$  both become  $k$  equaling  $\text{abs}(k)$ .

**Applicant Argues:**

Nowhere does paragraph 0099 teach or suggest modifying the direction of the fetch request based on partition ordering.

**Examiner Responds:**

Examiner is not persuaded. A fetch absolute operation can fetch forward or backward depending on the current direction it also can change direction so that the net result is that you always move forward hence how  $k$  and  $-k$  both become  $k$  equaling  $\text{abs}(k)$ .

**Applicant Argues:**

Nowhere does the cited paragraph 0095 teach or suggest selecting a node from a highest or lowest key value from each partition depending on the fetch direction.

**Examiner Responds:**

Examiner is not persuaded. Examiner relies on paragraph 0087. Paragraph 0087 discloses that if the fetch command is insensitive then **based on the specification of the fetch command** the cursor can be placed at prior first last or stay at its current position (See paragraph 0087).

**Applicant Argues:**

Amended claims 11,17,29 further require discarding the cached keys if the fetch request is in an opposite direction of a previous fetch request. Nowhere in the cited paragraph 0095 anywhere teach or suggest discarding cached keys if the fetch request is in an opposite direction of a previous fetch request.

**Examiner Responds:**

Examiner is not persuaded. Examiner relies on paragraph 0097 since the cached keys are stored on the pages that a fetched and they are discarded from the buffer pool when no longer needed.

***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leon J. Harper whose telephone number is 571-272-0759. The examiner can normally be reached on 7:30AM - 4:00Pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hosain T. Alam can be reached on 571-272-3978. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LJH  
Leon J. Harper  
July 26, 2006

  
MOHAMMAD ALI  
PRIMARY EXAMINER